

(12) **UK Patent Application** (19) **GB** (11) **2 338 701** (13) **A**

(43) Date of A Publication 29.12.1999

(21) Application No **9813381.2**

(22) Date of Filing **23.06.1998**

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(51) INT CL⁶
A61G 7/10

(52) UK CL (Edition Q)
B8H HLD

(56) Documents Cited
US 4872226 A **US 4744115 A** **US 3829914 A**

(58) Field of Search
UK CL (Edition Q) B8H HLD
INT CL⁶ A61G 7/10

(54) Abstract Title
Patient transfer aid

(57) A patient transfer aid of the type where transfer is effected by the sliding or rolling of one layer of flexible sheet material having a low coefficient of friction over another layer of material and where gripping means 6a, 19a, b are provided for gripping during the sliding or rolling transfer movement to assist in the transfer of the patient, wherein the patient transfer aid is provided with at least two gripping means which are varied in the distance at which they are positioned from the central axis 7 of the patient transfer aid. Preferably, the handles are non linear with respect to the central axis.

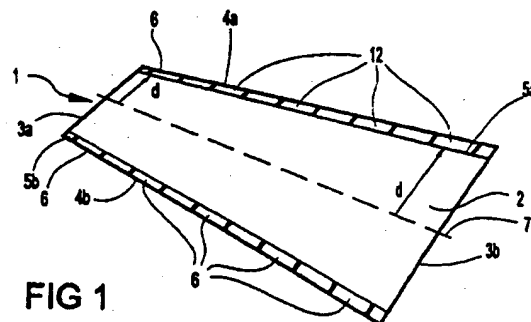


FIG 1

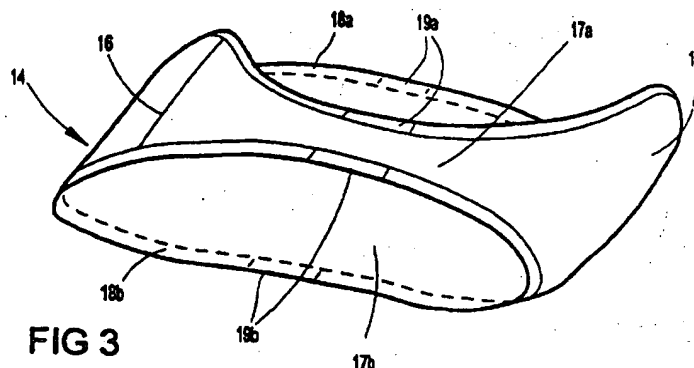


FIG 3

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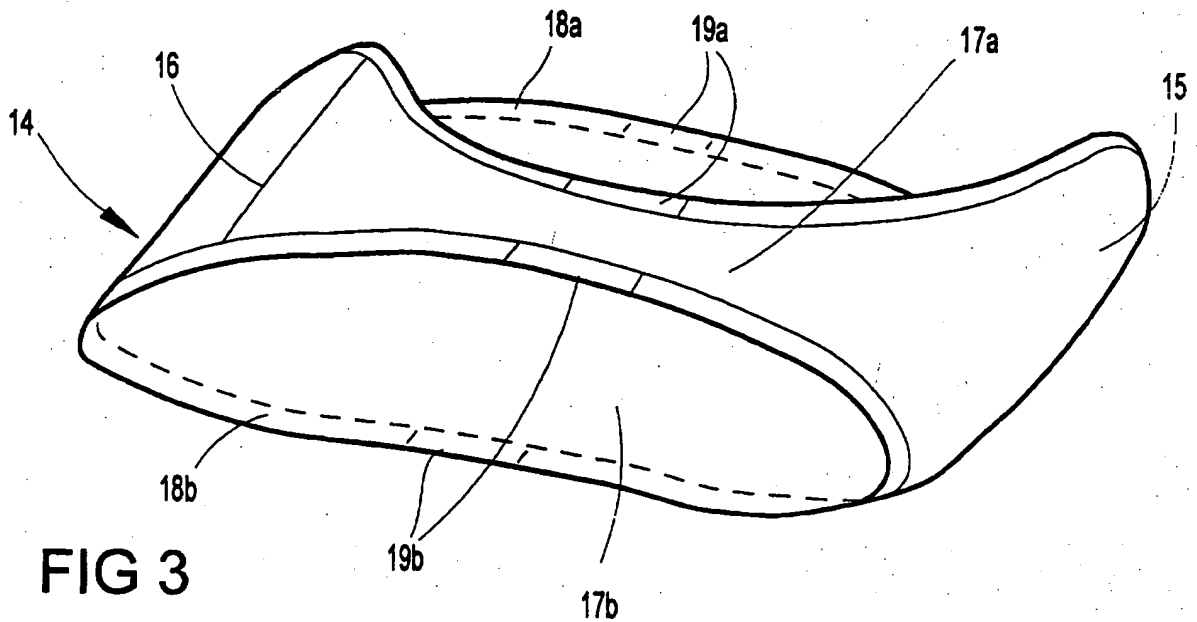
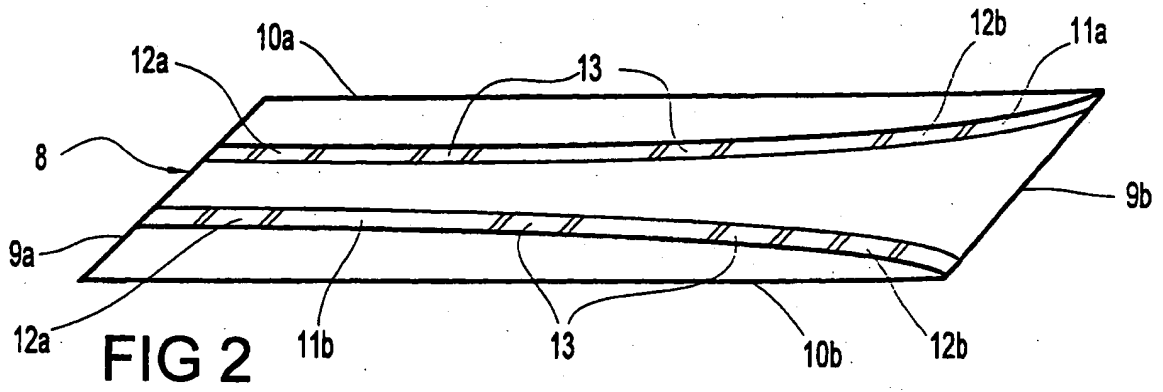
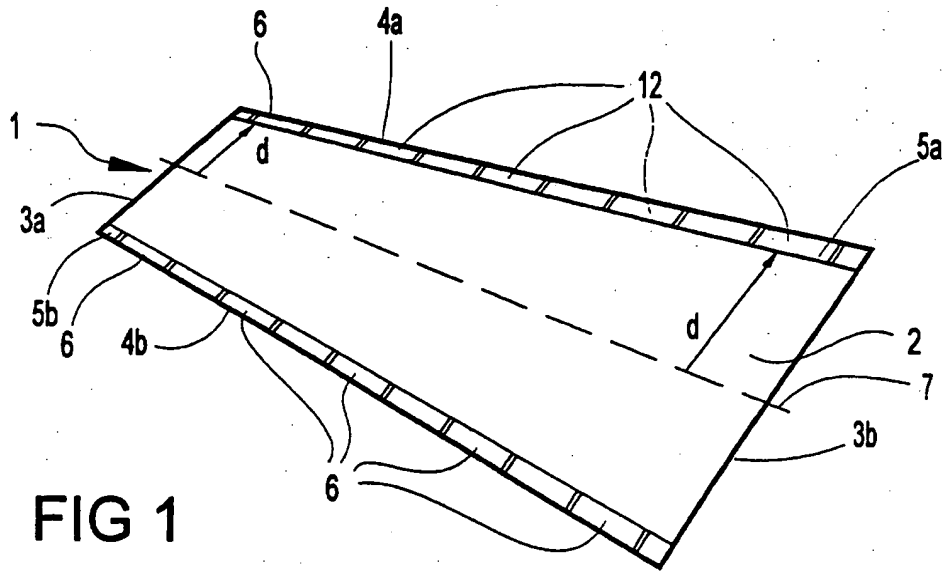


FIG 4A

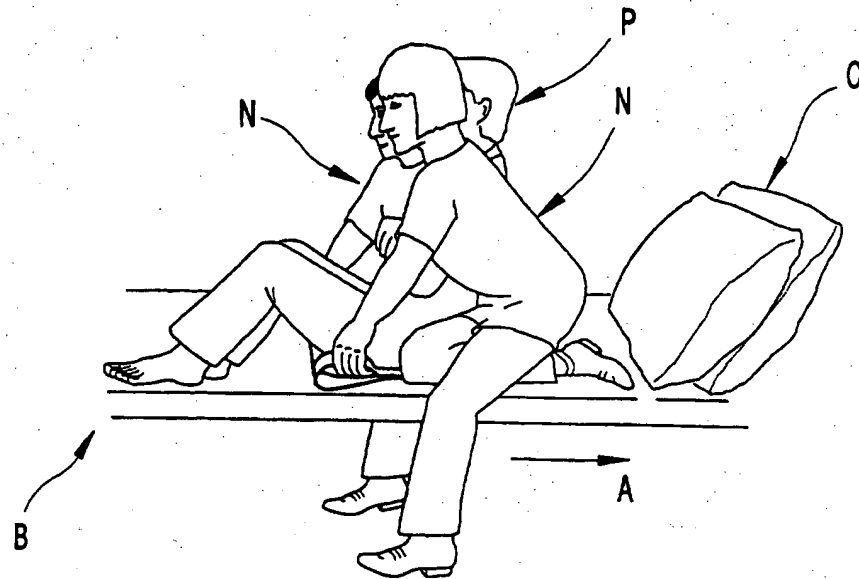
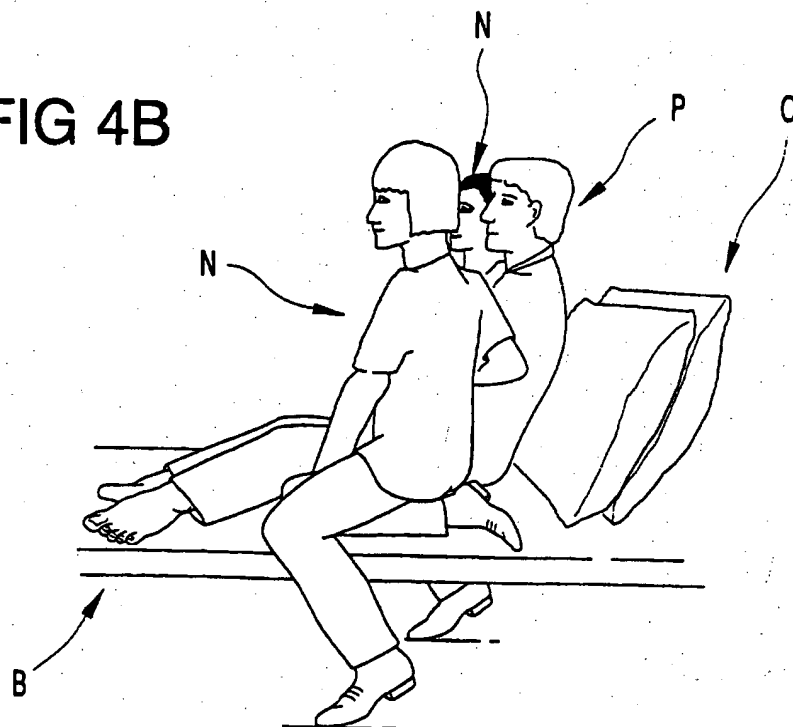


FIG 4B



PATIENT TRANSFER AID

This invention relates to an aid for use in the transfer and repositioning of patients.

5

It is well known that considerable effort needs to be exerted by any one person to move another human being manually. Aids have, therefore, been developed to assist persons, such as hospital staff or care assistants, who
10 need to move people frequently during the course of their work, in order to reduce the strain and fatigue involved. Indeed such aids are becoming ever more necessary in order to comply with national and regional legislation, such as the EC directive on the handling of loads.

15

One such aid which has been developed is generally known as a sliding or rolling transfer aid and consists of a flexible sheet material which can be doubled, i.e. one part folded on top of the other, to form an open-ended,
20 cylindrical tube in which two parts of the sheet are superimposed one on the other. The contact surfaces of the two superimposed parts of the sheet are made of a low-friction material. When the doubled sheet is placed on a supporting surface, e.g. a bed, stretcher, operating
25 table or the like, a patient who is to be moved can be gently manoeuvred onto the sheet and once in position on the sheet can be gently moved or transferred as desired by the sliding or rolling of the two parts over each

other in a direction generally perpendicular to the axis of the collapsed tube formed by the doubled sheet material. The friction between the patient and the uppermost part of the sheet material causes the patient to remain on that uppermost layer and move therewith as its slides on the lower part of the sheet. For some applications the lateral edges of the sheet may be joined together so that a permanent tube is formed which acts in use similarly to a conveyor belt, with the uppermost parts of the sheet material progressively being transferred during the sliding or rolling movement to the starting position of the underlying sheet. Using such rolling or sliding transfer aids a patient can be repositioned without the attendant members of staff needing to lift the patient or exert any great effort to effect the movement.

In order to most efficiently effect the transfer of patients, some conventional rolling or sliding transfer aids have been provided with handles, which may be grasped by the care assistant during the transfer movement. Conventional rolling or sliding transfer aids are rectangular in shape with parallel sides extending in the direction of the movement to be effected. To accommodate different sizes of patient it has been necessary to produce roller or sliding transfer aids in different sizes. This is because the handles which are provided to assist in movement of the patient need to be

as close to the patient as possible in order to avoid the possibility of wrinkling or unwanted motion of the sliding or rolling transfer aid and to ensure that there is a close coupling between the point of application of the force by the care assistant and its transfer from the sliding or rolling transfer aid to the patient. It has, therefore, been necessary in the past to stock a variety of different sized aids or for the efficiency of the transfer to be reduced by the use of an inappropriately sized aid.

There is, therefore, a need to improve on existing rolling or sliding transfer aids and in particular to provide such an aid capable of efficiently accommodating different sized patients.

According to the present invention there is provided a patient transfer aid of the type where transfer is effected by the sliding or rolling of the one layer of flexible sheet material having a low coefficient of friction over another layer of material and where means are provided for gripping during the sliding or rolling movement to assist in the transfer of the patient, wherein the patient transfer aid is provided with at least two gripping means which are varied in the distance from the central axis of the transfer patient aid at which they are positioned.

The term central axis of the patient transfer aid is used herein to indicate the axis passing centrally and generally longitudinally through the aid, i.e. parallel to the main directional component of the sliding or rolling movement of the patient transfer aid during normal use.

The patient transfer aid may be provided with only two gripping means varied in their position, but preferably has a plurality of gripping means varied in their positioned distance from the central axis. Gripping means may be provided on both sides of the central axis and preferably a plurality of gripping means varying in their distance from the central axis is provided on each side of the central axis of the patient transfer aid.

The relative position of the gripping means on either side of the central axis of the patient transfer aid can be varied as required, for example a plurality of gripping means could be staggered in relation to each other on either side of the central axis or alternatively or additionally gripping means could be provided in opposing pairs, with each gripping means of the opposing pair being positioned at substantially the same distance from the central axis as its pair but on an opposing side of it. It is particularly preferred that the patient transfer aid be provided with at least two opposing pairs of gripping means which pairs are varied in the distance from the central axis of the patient transfer aid at

which they are positioned. The pairs may be advantageously positioned so as to accommodate a larger than average and a smaller than average patient.

- 5 The gripping means should be designed and positioned so as to enable any care assistants to adopt good, substantially upright posture when moving a patient and to avoid strain or twisting movements. They should be such as to allow the care assistants to act on the aid
10 rather than on the patient, i.e. to enable a tractive force to be exerted on the sheet so as to reduce or eliminate the need to push or pull the patient. The gripping means are preferably such as not to obstruct the sliding or rolling movement of the sheet material. They
15 may take any suitable form as long as they enable a person to grip onto the flexible sheet material during transfer and preferably strengthen the material at that point of gripping. The gripping means preferably takes the form of a handgrip or handle, for example a lateral
20 or longitudinal loop or a handgrip or handle formed from a flat, flexible article, e.g. a fabric strip or tape, co-planar or superimposed on the sheet material in such a way so as not to substantially increase the bulk of the material or stiffen it appreciatively. The fabric strips
25 or tapes may be attached at either end so as to extend parallel to the central axis of the transfer patient aid and to allow the intermediate portion where they are not so attached to be gripped. An additional tape may be

provided in association with the gripping means to strengthen the aid where they are positioned. In these cases the gripping means may be secured to the additional tape. The additional tape could extend along the entire
5 length of the patient transfer aid, e.g. along or inwardly from its longitudinal edges, or be positioned just where gripping means are provided. The gripping means may be attached to the sheet material or additional tape by any suitable means including adhesive or
10 preferably stitching.

Varying the distance of the gripping means from the central axis can be effected by varying the position at which they are fixed on the sheet material. Where the
15 longitudinal sides are substantially parallel, e.g. with a substantially rectangular transfer patient aid, the gripping means will vary in their position from the longitudinal sides. It is advantageous, however, to provide the gripping means at the periphery or edge of
20 the longitudinal sides of the transfer patient aid and variation in the distance of the gripping means can be effected in such cases by varying the distance of those sides from the central axis. In other words the flexible sheet material may be shaped so that at least one of its
25 longitudinal sides does not extend substantially parallel with the central (longitudinal) axis. At least one, and preferably both, of the longitudinal sides may, for example, taper from a maximum width to a minimum width.

- Gripping means may then be positioned on the peripheral edges of those sides, optionally on a strengthening tape provided along that periphery. Alternatively one or both of the longitudinal sides may be regularly or irregularly curved. The patient transfer aid is preferably symmetrical about the central axis, has a minimum and a maximum width portion and optionally increases regularly in size from the minimum to the maximum width.
- 10 The presently claimed invention can be used for both open sheet or pre-manufactured (i.e. readymade) tube patient transfer aids. Where the sheet is pre-manufactured in a tube by the overlapping or abutting of two of its opposing (lateral) edges, any joins should be as flat as possible so as not to hinder the sliding/rolling movement of the sheet in use. With embodiments of the present invention which comprise a readymade tube, the upper layer of the tube may differ in width in comparison to the width of the lower layer. In these cases if the tube is positioned such that, in use, the overlying layer is moving towards a narrower portion of the underlying layer as the patient is moved in the intended direction of transfer, the upper layer and/or part of the patient, may come into contact with the underlying support surface (e.g. bed or operating table) leading to small areas of frictional engagement between the underlying surface and the patient or lower surface of the upper layer of the tube. This may be advantageously used to prevent the
- 15
- 20
- 25

patient returning along the line of movement of the transfer in a reverse direction.

The patient transfer aid may be formed from any suitable materials. The sheet material may be formed from any suitable flexible sheet material. It may be formed from a non-woven fabric. When woven, a plain weave is preferred for providing suitable flexibility to the material. The material is preferentially woven from strong threads having a relatively low coefficient of friction. For hospital use the material for both the gripping means and the sheet material should be easily cleanable and sterilisable, so that fabrics formed from synthetic filaments are preferred. The material is also preferably waterproof, e.g. by means of a waterproof coating or by using a sufficiently close weave. A particularly suitable fibre for use in the manufacture of both the gripping means and the sheet material is nylonTM. Nylon of various breaking strains is commercially available and the breaking strain chosen will depend on the particular application of the patient transfer aid. It is preferred to use an anti-bacterial material in order to reduce cross-infection risks in hospitals and nursing homes and this is particularly preferred for the material from which the gripping means is formed.

Although at least one part or surface of the sheet material should have or be provided with a low-friction

characteristic to enable it to easily slide or roll on the other material, the other parts or surfaces may have or be provided with a higher coefficient of friction. The sheet material could, for example, be manufactured with
5 different coefficients of friction on its two surfaces. Alternatively or additionally, to increase the low-friction characteristic of the contact face or faces of the patient transfer aid, it is possible to coat the material with a suitable low-friction coating, such as a
10 silicone elastomer. Fabrics so coated are commercially available with differential slip properties on their two faces. The patient transfer aid of the present invention is advantageously made from the commercially available product sold under the trade name Hyperlast. The
15 material from which the patient transfer aid is manufactured may either be a single layer or a multi layer (composite) structure.

To increase the low-friction nature of contacting surface
20 or surfaces, in cases where two layers of the patient transfer aid are to contact and roll or slide upon each other, it is preferred, where the sheet material is a woven material, that the warp and weft fibres of the two layers of material are inclined to the central axis, i.e.
25 inclined to the main directional component of the sliding or rolling movement. It is preferred that the inclination be in the range of 20° to 70° . For this purpose the woven sheet material from which the patient transfer aid is

manufactured may be cut on the bias.

As the magnitude of transfer movement that can be effected with a patient transfer aid depends on its size, 5 if necessary, aids according to the present invention may be provided in various sizes.

The present invention is applicable to rolling or sliding transfer aids of the type having associated with the sheet material a laminar element which can be 10 superimposed on the sheet material or on a tube formed therefrom. With these type of aids a patient is positioned on the laminar member, which is in effect a patient support layer. An advantage of such aids is that it allows a patient to be transferred twice the distance 15 that may be effected using a similarly sized rolling or sliding transfer aid without an additional laminar member. With such aids the laminar member may be permanently or releasably attached to the sheet material, or tube formed therefrom, e.g. by the use of permanent or 20 releasable fastening means. The use of high-friction, lightly adhesive materials, such as those sold by Dysen, is also known for such aids. Such materials allow a secure, non-slip contact to be made between facing surfaces which can be released easily by peeling one from 25 the other. With such a material the laminar member may be non-permanently associated with the flexible sheet material. The laminar member may itself be provided with holding or grip means. It may be advantageously provided

with handles allowing the remote use of force on the transfer aid, for which purpose the laminar element may be provided with long handles or straps permanently or releasably attached at suitable points. Alternatively or
5 additionally the at least two gripping means varied in the distance at which they are positioned from the central axis of the patient transfer aid are provided on the laminar member alternatively or additionally to any such gripping means provided on the underlying sheet
10 material.

For a better understanding of the present invention, and to show how the same may be put into effect, reference will now be made, for the purposes of illustration only,
15 to the accompanying drawings in which:

Figure 1 is a perspective view of a first embodiment of a transfer aid according to the present invention;

Figure 2 is a perspective view of a second embodiment of a transfer aid according to the present
20 invention;

Figure 3 is a third embodiment of a transfer aid according to the present invention; and

Figure 4 shows the transfer aid of Figure 3 in use for the transfer of a patient from a position shown in
25 Figure 4A to that shown in Figure 4B.

The first embodiment of a transfer aid generally indicated 1 in Figure 1 comprises a sheet 2 of flexible

material in the shape of a trapezium having its lateral sides 3a, 3b extending in parallel and its longitudinal sides 4a, 4b extending outwardly from each other so that the sheet material 2 tapers from a minimum width to a maximum width. Two 25 mm wide nylonTM edging or strengthening tapes 5a, 5b are provided on the upper surface of the sheet material 2 extending along the length of the longitudinal sides 4a, 4b. On top of the strengthening tapes 5a, 5b positioned regularly along the longitudinal sides 4a, 4b are five pairs of opposing handles 6 which take the form of fabric strips stitched laterally at each end to the strengthening tapes 5a, 5b respectively. The handles 6 are of sufficient length to be gripped by a hand inserted between the respective tape 5a, 5b and the handle 6. As the handles 6 are positioned along the peripheral edges of the outwardly tapering longitudinal sides 5a, 5b they vary in the distance d at which they are positioned with respect to the central axis 7 of the patient transfer aid 1. The under surface of the sheet material 2 is provided with a low-friction coating of a silicone elastomer so that it is able to slide readily on an underlying layer of material.

The second embodiment of a transfer aid generally indicated 8 in Figure 2 of the drawings comprises a rectangular sheet of material similar to that of the aid shown in Figure 1, but having parallel extending lateral sides 9a, 9b and longitudinal sides 10a, 10b. The aid 8

of this second embodiment is provided with strengthening tapes 11a, 11b extending from the corners where the longitudinal edges 10a, 10b meet one of the lateral sides 9b to positions along the other lateral side 9a distanced 5 in from the corners of that side. Along the strengthening tapes 11a, 11b are positioned two opposing pairs 12a, 12b of hand grips and four additional hand grips 13 arranged in a staggered formation. These handgrips 12a, 12b and 13 vary in their distance from the 10 central axis.

The third embodiment of a transfer aid generally indicated 14 in Figure 3 comprises a sheet of material having sides curving from a narrow inward position to a 15 wide outer position. The sheet material 15 is folded on itself so that its two opposing lateral sides abut or overlap and are joined together at a seam 16 to form an open ended tube. The appearance of the tube is exaggerated in Figure 3 for clarity. The seam 16 is of 20 minimum thickness so as not to obstruct the movement of the sheet material in use. In use the tube is collapsed, with an upper half-sheet 17a of the material lying on a lower half-sheet 17b. Due to the curved nature of the sides of the sheet material 15 the upper layer 17a is 25 narrower in width than that of the lower layer 17b. One surface of the sheet material 15, which constitutes the inner surface of the tube, has a low-friction coating of a silicone elastomer (coating rate of 60 g/m²) so that the

inner, contacting surfaces of the tube will slide readily over and under each other. The aid 14 is provided with two 25 mm wide, nylon™ edging tapes 18a, 18b attached to the outer face of the sheet material 15 so as to

5 completely surround the two respective open ends of the tube. The edging tapes 18a, 18b are fixed to the sheet material 15 by longitudinal lines of stitching. Each tape 18a, 18b has two portions 19a, 19b which are not longitudinally stitched to the sheet material 15. Those

10 portions 19a, 19b are of sufficient length to be gripped by a hand inserted between the tape portion 19a, 19b and the underlying sheet material 15 so that the portions 19a, 19b constitute two pairs of opposing handles or handgrips. Although two opposing pairs of handles are

15 shown in Figure A, positioned at the minimum and maximum widths of the patient transfer aid 14, several opposing or staggered handles could be provided circumferentially around the tube.

20 In use, as shown in Figures 4A and 4B, the aid 14 of the third embodiment may be placed on a bed B and a patient P manoeuvred into a position in which they are sitting on the doubled tubular sheet material 15. Depending on the size of the patient to be transferred the exact position

25 of the flattened tube can be selected until a pair of opposing handles appropriate in separation to the width of the patient to be moved are located uppermost and close to the patient. The handles are at best positioned

near the patient's thighs as shown in Figure 3A. The two nurses N place themselves on either side of the patient facing in the same direction as the patient and partly kneeling on the bed. In this position they can support the patient at the same time as being able to grasp one of the handles. The nurses N then pull the handles in a direction as shown by the arrow A perpendicular to the tube axis. This slides the upper half-sheet of the aid on the lower half-sheet making the entire aid move along the bed B in the direction of the A and carrying the patient P with it to the position shown in Figure 4B. The movement is achieved without the need for the nurses to support the full weight of the patient's body.

With the present invention it is possible to have a single patient transfer aid capable of accommodating different sizes of patient while still allowing the point of application of force by the carer via gripping means provided on the aid to be as close as possible to the patient and so avoid wrinkling or unwanted motion of the transfer aid and allow efficient transfer of that force from the care assistant to the patient.

CLAIMS

1. A patient transfer aid of the type where transfer is effected by the sliding or rolling of one layer of flexible sheet material having a low co-efficient of friction over another layer of material and where gripping means are provided for gripping during the sliding or rolling transfer movement to assist in the transfer of the patient, wherein the patient transfer aid is provided with at least two gripping means which are varied in the distance at which they are positioned from the central axis of the patient transfer aid.

2. A patient transfer aid according to Claim 1, wherein a plurality of gripping means are provided which are varied in their positioned distance from the central axis.

3. A patient transfer aid according to Claim 1 or 2, wherein at least two opposing pairs of gripping means are provided with the pairs varying in their positioned distance from the central axis of the patient transfer aid.

4. A patient transfer aid according to any one of Claims 1 to 3, wherein the sheet material from which the patient transfer aid is manufactured has longitudinal sides extending substantially in parallel to each other

and the central axis and the at least two gripping means vary in their distance from those parallel sides.

5 5. A patient transfer aid according to any one of
Claims 1 to 3, wherein the sheet of flexible material
from which the patient transfer aid is formed is shaped
so that at least one of its longitudinal sides does not
extend substantially parallel with the central axis and
the at least two gripping means are provided on the
10 periphery of that longitudinal edge.

6. A patient transfer aid according to any preceding
claim, wherein the sheet material is in the form of a
ready-made tube.

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7. A patient transfer aid according to any preceding
claim, wherein the gripping means is formed from an anti-
bacterial material.

20 8. A patient transfer aid substantially as hereinbefore
described with reference to and illustrated in Figure 1;
Figure 2; or Figures 3 and 4 of the accompanying
drawings.



Application No: GB 9813381.2
Claims searched: 1-8

Examiner: Dave McMunn
Date of search: 15 March 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): B8H (HLD).

Int Cl (Ed.6): A61G 7/10.

Other: -

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	US 4,872,226 (LONARDO). Note strap ends 24-34 & loops 38-44	1-4,6,7
X	US 4,744,115 (MARCHIONE). Note hand-holes 22-28 & pull tabs 48	1-4,6,7
X	US 3,829,914 (TREAT). Note pull tabs 46 & handles 48	1-4,6,7

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